AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Canceled)

2. (Previously Presented) The method of claim 45, wherein the at least one parameter comprises at least one selected from the group consisting of a performance parameter, an environment parameter, and a simulation parameter.

3. (Currently Amended) The method of claim 2, wherein the performance parameter comprises drilling parameters.

4. (Previously Presented) The method of claim 2, wherein the environment parameter comprises cutting element interaction data and bottom hole geometry data.

5. (Previously Presented) The method of claim 45, wherein the determining the radial forces comprises:

rotating the selected drill bit;

calculating a new location of a cutting element on the selected drill bit;

determining an interference between the cutting element and an earth formation at the new location; and

calculating a radial force acting on the earth formations based on the interference at the new location.

6. (Previously Presented) The method of claim 45, wherein the selected drill bit is a roller cone drill bit.

7. (Previously Presented) The method of claim 6, wherein bit design parameters of the selected drill bit comprise at least one selected from the group consisting of a cone profile, a cone axis offset, a number of cutting elements on each cone, a location of a cutting element of the selected drill bit, a size of a cutting element of the selected drill bit, a shape of a

cutting element of the selected drill bit, and an orientation of a cutting element of the selected drill bit.

8. (Previously Presented) The method of claim 45, wherein the selected drill bit is a fixed cutter drill bit.

9. (Previously Presented) The method of claim 8, wherein bit design parameters of the selected drill bit comprise at least one selected from the group consisting of a cutter location, a cutter orientation, a cutter size, a cutter shape, and a cutter bevel size, a bit profile, a bit diameter, a number of blades on the selected drill bit, a blade geometry, a blade location, a junk slot area, and a bit axial offset.

10. (Previously Presented) The method of claim 45, wherein the evaluating the radial forces comprises:

summing magnitudes of the radial forces with respect to a direction to generate a sum of the radial forces;

comparing the sum of the radial forces to an applied weight-on-bit; and

generating a ratio between the sum of the radial forces and the applied weight-on-bit.

11. (Original) The method of claim 10, wherein the ratio of the sum of the radial forces to the applied weight-on-bit is ~~no more than about~~ less than or equal to 0.20.

12. (Original) The method of claim 10, wherein the ratio of the sum of the radial forces to the applied weight-on-bit is ~~no more than about~~ less than or equal to 0.10.

13. (Original) The method of claim 10, wherein the ratio of the sum of the radial forces to the applied weight-on-bit is ~~no more than about~~ less than or equal to 0.05.

14. (Previously Presented) The method of claim 45, wherein the evaluating the radial forces comprises:

plotting magnitudes of the radial forces with respect to at least one selected from the group consisting of a direction of force, a frequency of occurrence, and time, to generate a radial force plot.

15. (Previously Presented) The method of claim 14, wherein the radial force plot comprises a polar plot of the magnitudes and directions of the resultant radial forces.

16. (Previously Presented) The method of claim 15, wherein the polar plot indicates that the resultant radial forces are less than a predetermined value for a selected percentage of the time during the simulated drilling.

17. (Previously Presented) The method of claim 16, wherein the selected percentage of the time during the simulated drilling is 70%.

18. (Previously Presented) The method of claim 14, wherein the radial force plot comprises a chart plot of the resultant radial force.

19. (Previously Presented) The method of claim 18, wherein the chart plot indicates that the radial resultant forces are less than a predetermined value for a selected percentage of the time during the simulated drilling.

20. (Previously Presented) The method of claim 19, wherein the selected percentage of the time during the simulated drilling is 70%.

21. (Previously Presented) The method of claim 14, wherein the radial force plot comprises a box-whisker plot of the resultant radial forces.

22. (Previously Presented) The method of claim 21, wherein the box-whisker plot indicates that the resultant radial forces are less than a predetermined value for a selected percentage of the time during simulated drilling.

23. (Previously Presented) The method of claim 22, wherein the selected percentage of the time during the simulated drilling is 70%.

24. (Canceled)

25. (Previously Presented) The method of claim 46, wherein the evaluating the radial forces comprises:

summing a magnitude of the radial forces with respect to the direction to generate a sum of radial forces;

comparing the sum of radial forces to an applied weight-on-bit; and

generating a ratio between the sum of the radial forces and the applied weight-on-bit.

26. (Previously Presented) The method of claim 46, wherein the evaluating the radial forces comprises:

plotting a magnitude of the radial forces with respect to at least one selected from a group of direction of force, frequency of occurrence, time, to generate a radial force plot.

27. (Previously Presented) The method of claim 26, wherein the radial force plot comprises a polar plot of the magnitudes and directions of the resultant radial forces.

28. (Previously Presented) The method of claim 27, wherein the polar plot indicates that the resultant radial forces are less than a predetermined value for a selected percentage of the time during the simulated drilling.

29. (Previously Presented) The method of claim 28, wherein the selected percentage of the time during the simulated drilling is 70%.

30. (Previously Presented) The method of claim 26, wherein the radial force plot comprises a chart plot of the resultant radial force.

31. (Previously Presented) The method of claim 30, wherein the chart plot indicates that the radial resultant forces are less than a predetermined value for a selected percentage of the time during the simulated drilling.

32. (Previously Presented) The method of claim 31, wherein the selected percentage of the time during the simulated drilling is 70%.

33. (Previously Presented) The method of claim 26, wherein the radial force plot comprises a box-whisker plot of the resultant radial forces.

34. (Previously Presented) The method of claim 33, wherein the box-whisker plot indicates that the resultant radial forces are less than a predetermined value for a selected percentage of the time during simulated drilling.

35. (Previously Presented) The method of claim 34, wherein the selected percentage of the time during the simulated drilling is 70%.

36. (Previously Presented) The method of claim 46, further comprising adjusting bit design parameters.

37. (Previously Presented) The method of claim 36, wherein the bottomhole assembly comprises a roller cone drill bit; and wherein the bit design parameters comprise at least one of a group consisting of a cone profile, a cone axis offset, a number of cutting elements on each cone, a location of a cutting element of the drill bit, a size of a cutting element of the drill bit, a shape of a cutting element of the drill bit, and an orientation of a cutting element of the drill bit.

38. (Previously Presented) The method of claim 36, wherein the bottomhole assembly comprises a fixed cutter drill bit; and wherein the bit design parameters comprise at least one of a group consisting of a cutter location, a cutter orientation, a cutter size, a cutter shape, and a cutter bevel size, a bit profile, a bit diameter, a number of blades on the bit, a blade geometry, a blade location, a junk slot area, and a bit axial offset.

39. (Canceled)

40. (Previously Presented) The method of claim 46, wherein the graphically displaying occurs in real time.

41. (Canceled)

42. (Cancelled)

43. (Cancelled)

44. (Canceled)

45. (Currently Amended) A method for designing a drill bit, comprising:

determining radial forces acting on a selected drill bit during simulated drilling;

evaluating the radial forces based on at least one selected criterion; and

adjusting at least one parameter of the selected drill bit based on the evaluating; and

outputting a drill bit design based on the evaluating and the adjusting.

46. (Currently Amended) A method for designing a bottomhole assembly, comprising:

determining radial forces acting on a bottom hole assembly during simulated drilling, said bottomhole assembly including a drill bit;

evaluating the radial forces based on at least one selected criterion; and

adjusting at least one parameter of the bottom hole assembly based on the evaluation; and

outputting a bottom hole assembly design based on the evaluating and the adjusting.

47. (Currently Amended) A method for designing a bit, comprising:

determining radial forces acting on a selected drill bit during a simulated drilling in selected earth formation;

graphically displaying the radial forces determined during the simulation; and

adjusting at least one parameter of the drill bit based on the graphical display of the radial forces; and

outputting a drill bit design based on the graphically displaying and the adjusting.

48. (Currently Amended) A method for selecting a bit design, comprising:

simulating a first bit design drilling in earth formation;

obtaining a first set of radial forces determined from the simulating of the first bit design;

simulating a second bit design drilling in earth formation;

obtaining a second set of radial forces determined from the simulating of the second bit design;

evaluating the first set of radial forces and the second set of radial forces based on a selected criterion; ~~and~~

selecting a preferred bit design based on the evaluating; and

outputting the preferred bit design.